

TECHNOLOGY NEEDS/OPPORTUNITIES STATEMENT

FIXATIVES FOR BUILDINGS 324 AND 327

Identification No.: RL-DD07

Date: November 2001

Program: 300 Area Facility Transition

OPS Office/Site: Richland Operations Office/Hanford Site

PBS No.: RL-RC06

Waste Stream: N/A - Radioactively contaminated surfaces with loose or dispersible contamination

TSD Title: N/A

Operable Unit (if applicable): N/A

Waste Management Unit (if applicable): N/A

Facility: Buildings 324 and 327

Priority Rating:

This entry addresses the "Accelerated Cleanup: Paths to Closure (ACPC)" Priority:

- ☐ 1. Critical to the success of the ACPC.
- ☒ 2. Provides substantial benefit to ACPC projects (e.g., moderate to high life-cycle cost savings or risk reduction, increased likelihood of compliance, increased assurance to avoid schedule delays).
- ☐ 3. Provides opportunities for significant, but lower cost savings or risk reduction, and may reduce uncertainty in ACPC project success.

Need Title: Fixatives for Buildings 324 and 327.

Need/Opportunity Category: *Technology Opportunity* -- The Site desires an alternative to the current baseline technology.

Need Description: Long-lived fixatives that are easily applied to, and (in some cases) removed from, surfaces are needed to immobilize radioactive materials. Fixatives will be needed for a variety of surfaces such as those encountered in materials processing facilities, glove boxes, hot cells, tanks and tank vaults, and ductwork.

Schedule Requirements:

Earliest Date Required: (01/01/02)

Latest Date Required: (09/7/07)

Fixatives may be deployed from 2002 through 2007.

Problem Description: Dispersible surface contamination is present in hot cell facilities. Such dispersible contamination often presents a worker exposure concern and a long-term environmental concern. In areas where decontamination is not feasible, dispersible contamination is fixed in place. At present, long-term performance of commercially available fixatives under radiation fields is not well understood.

Potential Life-Cycle Cost Savings of Need (in \$000s) and Cost Savings Explanation: A ROM estimate of LCCS due to the application of improved fixatives is \$400-500K. This estimate is preliminary, and assumes similar application costs for baseline versus improved fixatives. Savings should result from the need for less-frequent applications, efficiencies gained through ALARA measures, and a reduction in the degree of decontamination required prior to size reduction and/or packaging of waste materials.

Benefit to the Project Baseline of Filling Need: Effective use of fixatives supports ALARA practices and results in a more controlled and safer and more efficient environment for workers. Other expected benefits are noted in the paragraph above.

Relevant PBS Milestones:

TRP-06-921	324 Deactivation Complete	September 22, 2006
TRP-07-930	327 Deactivation Complete	September 7, 2007

Functional Performance Requirements: The fixative may be used to immobilize dispersible alpha, beta, and gamma contamination. In some situations, the fixative may need to be easily removable to allow for eventual decontamination. Thin-filmed fixatives with a 20-25 year life are preferred. A two-phased fixative would be acceptable: 1) long-term fixative and 2) stripper that easily removes the long-term fixative. Flammability ratings before, during and after mixing of multi-component fixatives may be a concern for certain application.

Work Breakdown

Structure (WBS) No.: 1.04.10, 324/327 Buildings Stabilization/Deactivation

TIP No.: N/A

Justification for Need:

Technical: Dispersible radioactive contamination can present safety/exposure concerns.

Regulatory: Tri-Party Agreement Milestone M-89-00: Complete Closure of the Non-permitted MW Units of the 324 REC, HLV and LLV by October 2005. The 327 Building contains no TSD units; only the generating facility requirements of RCRA apply.

Environmental Safety and Health: Dispersible radioactive contamination can present safety/exposure concerns.

Cultural/Stakeholder Concerns: Employee and public exposure to radioactive materials is a concern of Hanford stakeholders.

Other: None identified.

Current Baseline Technology: Paint, tar, polymeric barrier system, rustoleum.

End User: EM-40.

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